

12. SELECTED REMEDY

12.1 Description of Selected Remedy

12.1.1 CFA-04 Pond (OU 4-05)

12.1.1.1 Selected Remedy. The Agencies have selected Alternative 3a, Excavation, Treatment by Stabilization, and on-INEEL Disposal for the CFA-04 Pond mercury-contaminated soil. The selected alternative most cost-effectively meets the threshold and balancing criteria of the three alternatives considered. Under this alternative, approximately 6,338 m³ (8,290 yd³) of contaminated soil will be excavated. Soil with concentrations above the RCRA characteristic hazardous waste levels (estimated as 608 m³ [796 yd³]) will be stabilized with cement to comply with 40 CFR 268.49. The pond and adjacent excavations will be backfilled with clean soil to grade. The ground surface will be contoured to match the surrounding terrain or sloped to promote drainage and revegetated.

This remedy will consist of the following actions:

1. Characterizing the site and excavating soil from CFA-04 that exceeds the mercury FRG of 0.50 mg/kg. Soil contaminated at concentrations above the FRG will be excavated to 10 ft. (bgs), or to basalt. No basalt will be excavated.
2. Transporting and disposing of soil that exceed the mercury FRG to the proposed ICDF.
3. Stabilizing soil with TCLP mercury concentrations greater than 0.2 mg/L using cement and verification that all LDRs are met.
4. Performing verification sampling to ensure that soil exceeding the FRG of 0.50 mg/kg mercury has been removed.
5. Backfilling the pond, and adjacent areas that have been excavated, with uncontaminated soil to grade or sloped to promote drainage. All excavations will be contoured to match the surrounding terrain and revegetated.

Long-term institutional controls are not anticipated for the CFA-04 Pond, but will be evaluated after remediation.

12.1.1.2 Evaluation. Alternative 3a will protect human health and the environment and will comply with ARARs. This alternative will be highly effective long-term because it removes the contamination. It will only be moderately effective short-term because of the possibility of worker exposure during excavation, transport, and disposal. Alternative 3a will not reduce toxicity or volume through treatment, but will reduce contaminant mobility through stabilization. Implementability of Alternative 3a is moderate, because availability of the disposal facility on the INEEL is uncertain.

Compared to the other alternatives that meet the threshold criteria (3b and 4), Alternative 3a will be as or more effective long-term, and equally effective short-term. Its ranking for reduction of toxicity, mobility, or volume through treatment is the same or better. Its implementability is lower than for Alternatives 3b and 4, given the uncertain availability of the on-INEEL disposal facility; however, all other required technologies and personnel are available. The estimated \$4.8 million cost is the lowest of the three alternatives that meet threshold criteria. Therefore, this alternative 3a is the selected remedy.

12.1.1.3 Performance Standards. Performance standards will be implemented to ensure that excavation, treatment, and disposal activities will result in protection against direct exposure to mercury during excavation and after disposal. The performance standards identified for this alternative include:

- Removing mercury contaminated soil where concentrations exceeding the FRG (0.5 mg/kg) are detected.
- Sampling soil at the pond to confirm that the cleanup meets or exceeds FRGs.
- Sampling of contaminated soil removed from the pond to confirm that soil disposed to the ICDF meets treatment standards for mercury and all underlying hazardous constituents (40 CFR 268.48). It must also meet the waste acceptance criteria of the ICDF. Soil meeting this standard must be less than 0.2 mg/L using TCLP analysis. Contaminated soil that does not meet treatment standards and requires treatment will be treated prior to disposal.

12.1.2 CFA-08 Sewage Plant Drainfield (OU 4-08)

12.1.2.1 Selected Remedy. The Agencies have selected Alternative 4, Containment, for the CFA-08 SP Drainfield. The selected alternative most cost-effectively meets the threshold and balancing criteria, of the three alternatives considered. Under this alternative, the contaminated site will be covered with an engineered protective cover. This cover will be an engineered barrier, constructed of layers of rock and soil with a vegetative cover. This barrier will isolate the waste and minimize water infiltration. The cover will be designed to isolate the low-level radioactive contaminants from human and biotic intrusion and to provide radiation shielding for a period of 189 years. The following remedial actions will be performed at the site:

1. Constructing an engineered ET cover. Clean native soil will be used for fill material as needed.
2. Contouring and grading the surrounding terrain to direct the surface water runoff away from the cover.

The continued effectiveness of this remedy will be evaluated through soil cover integrity monitoring and above-ground radiological surveys. Because contamination is to be left in place, ICs are necessary for CFA-08 to restrict access until the land can be released for unrestricted use. Institutional controls to be implemented at CFA-08 include:

- Restricting access through the use of signs and permanent markers
- Controlling land use leasing and property transfers
- Establishing and publishing surveyed boundaries
- Controlling activities on the land.

12.1.2.2 Evaluation. Alternative 4 was selected for CFA-08 because it is protective of human health and the environment and complies with ARARs. It will have high long-term effectiveness because it will eliminate the direct exposure pathway and contain the contamination until the risks to human health posed by the cesium-137 drop below threshold levels. In addition, it will eliminate the ecological risk exposure pathway to the mercury. Short-term effectiveness will be moderate due to the possibility for worker

exposure during construction. This alternative will not reduce toxicity, mobility, or volume through treatment. Implementability of Alternative 4 is high, because the technology, personnel, and materials are readily available. Institutional Controls are required for the selected option.

Compared to the other alternatives that meet the threshold criteria (3a and 3b), Alternative 4 will have the same or greater long-term effectiveness and implementability. Its short-term effectiveness is greater than that for Alternatives 3a and 3b because of reduced worker exposure to site risks. Its ranking for reduction of toxicity, mobility, or volume through treatment is the same as for Alternative 2, and is lower than Alternatives 3a and 3b, because Alternative 4 involves no treatment. The estimated \$9.9 million cost is significantly lower than for Alternatives 3a and 3b. Therefore Alternative 4 is the selected remedy.

12.1.2.3 Performance Standards. The performance standards identified for Alternative 4 include the following design requirements for the cover:

- Develop and implement surface monitoring and maintenance programs to detect cesium-137 and contain it within the site boundary.
- Institute restrictions limiting land use/access for at least 189 years. Institutional controls will be maintained and transferred, as applicable, until cesium-137 has decayed to an acceptable risk level.
- Implement surface water controls to direct surface water away from the capped drainfield.
- Eliminate, to the extent practicable, the need for ongoing active maintenance following construction so that only surveillance, monitoring, and minor custodial care are required.
- Design and construct an adequate cover to inhibit erosion by natural processes for the specified design life of the cover.
- Incorporate features that will inhibit biotic intrusion into the contaminated drainfield.

12.1.3 CFA-10 Transformer Yard (OU 4-09)

12.1.3.1 Selected Remedy. The Agencies have selected Alternative 3b, Excavation, Treatment by Stabilization, and Off-INEEL Disposal for CFA-10 Transformer Yard. The selected alternative most cost-effectively meets the threshold and balancing criteria of the three alternatives considered. Under this alternative, the contaminated soil (approximately 122 m³ [160 yd³]) will be excavated. The soil will be transported to an off-Site disposal facility and soil requiring treatment per 40 CFR 268.49 will be stabilized before disposal; soil not requiring treatment will be disposed of directly. The excavation will be backfilled with clean soil, contoured to match the surrounding terrain, sloped to divert water, and revegetated.

This remedy will consist of the following actions:

1. Characterizing the site and excavating soil from CFA-10 that exceeds the lead FRG of 400 mg/kg
2. Performing verification sampling in the excavated yard to ensure that soil exceeding the FRG of 400 mg/kg for lead has been removed

3. Stabilizing, with cement, soils with lead concentrations above the RCRA characteristic hazardous waste level of 5 mg/L, if any, and sampling stabilized soil to meet LDRs
4. Transporting and disposing of excavated and stabilized soil to a permitted off-INEEL TSDF
5. Backfilling areas that have been excavated with uncontaminated soil to grade or sloping it to promote drainage. All excavations will be contoured to match the surrounding terrain and revegetated.

No long-term ICs are anticipated for the CFA-10 Transformer Yard site, but they will be evaluated after remedial action.

12.1.3.2 Evaluation. At the CFA-10 site, Alternative 3b is protective of human health and the environment, and complies with ARARs. The alternative will have high long-term effectiveness because it will remove the contamination from the INEEL. Its short-term effectiveness will be moderate, because of the possibility for worker exposure during excavation, transport, and disposal activities. Alternative 3b will not reduce toxicity through treatment, but will reduce mobility through stabilization. The treatment with cement will increase volume. Implementability of this alternative is high, because the technology, off-INEEL disposal facility, and personnel are readily available.

Compared to the other alternatives that meet the threshold criteria (3a and 4), Alternative 3b will have the same or greater long-term effectiveness and the same short-term effectiveness. It ranks the same or better compared with the other alternatives for reduction of toxicity, mobility, or volume through treatment. The implementability of Alternative 3b is greater than other alternatives. The estimated \$1.4 million cost is slightly more than for Alternative 3a but substantially lower than for Alternative 4. Alternative 3b, is relatively equal in all other respects and was selected by the Agencies because it can be implemented more rapidly than Alternatives 3a or 4.

12.1.3.3 Performance Standards. Performance standards will be implemented to ensure that excavation, treatment, and disposal activities will result in protection against direct exposure to lead during excavation and after disposal. The performance standards identified for this alternative include:

- Removing lead contaminated soil where concentrations exceeding the FRGs (400 mg/kg) are detected. Sampling of the stabilized soil to confirm that soil disposed meets treatment standards for lead and all underlying hazardous constituents.
- Sampling the transformer yard soil to confirm that the cleanup meets or exceeds FRGs.

12.2 Institutional Controls

Institutional controls or land use restrictions will be maintained by DOE at any INEEL CERCLA site where residual contamination precludes unrestricted land use per EPA Region 10 Policy (EPA 1999a). A site is considered available for unrestricted land use if potential risks to a current resident are less than 1E-04. ICs may be discontinued if contaminant conditions or potential risk levels change; if these situations occur, they will be documented during CERCLA five-year reviews.

In accordance with CFLUP (DOE-ID 1996), DOE will provide ICs for sites subject to land-use restrictions over the next 100 years unless a CERCLA five-year review concludes that unrestricted land use is allowable. After 100 years, DOE may no longer manage INEEL activities but controls will remain in place in the form of land-use restrictions. The Hall Amendment of the National Defense Authorization

Act of 1994 (Public Law 103-160) requires concurrence from EPA on the lease of any site on the National Priorities List (NPL) during the period of DOE-ID control. CERCLA (42 USC 9620 § 120[h]) requires that the state be notified of a lease involving a site, where contaminants may be present. DOE-ID is also required under CERCLA (42 USC 9620 § 120[h]) to indicate the presence of contamination and any restrictions at the time of property transfer.

Table 12-1 summarizes the IC evaluation for all sites at WAG 4. Long-term ICs are planned for four sites that include the CFA-08 SP Drainfield and the CFA I, II, and III Landfills (OU 4-12). The Drainfield will require ICs because of the residual risk from cesium-137 that will remain at the site for approximately 189 years. ICs were identified as part of the selected remedy for the Landfills in the OU 4-12 ROD to ensure that future activities would not compromise the integrity of the covers (DOE-ID 1995). A description of ICs that will be applied for these sites is provided in Table 12-2 and the estimated costs for ICs at CFA-08 are included in Table 12-3.

Additional ICs are not planned for CFA-04 Pond and CFA-10 Transformer Yard prior to remediation since there is only a residential use concern and INEEL has adequate land use controls in place to prevent residential use during current DOE operations. Also these sites are being permanently fenced with locked gates and require the approval of the ER WAG 4 Manager and the CFA Site Area Director to enter. Any soil disturbance would require a Soil Disturbance Notification which requires Agency approval. One of the 47 no action sites at WAG 4 also requires ICs. The CFA-07 French Drain has residual lead contamination above the 400 mg/kg screening level below 10 ft.

A comprehensive approach for establishing, implementing, enforcing, and monitoring institutional controls will be developed in accordance with Environmental Protection Agency (EPA) "Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities" (EPA 1999b). The following elements for WAG 4 institutional controls will be developed in the operation and maintenance (O&M) plan and will involve a facility-wide land use plan and procedures for controlling activities as outlined in the policy:

- A comprehensive facility-wide list of all WAG 4 areas or locations covered by any and all decision documents at the facility that have or should have institutional controls for protection of human health or the environment. The information on this list will include, at a minimum, the location of the area, the objectives of the restriction or control, the timeframe that the restrictions apply, and the tools and procedures that the facility will use to implement the restrictions or controls and to evaluate the effectiveness of the restrictions or controls.
- Cover, and legally bind where appropriate, all entities and persons, including, but not limited to, employees, contractors, lessees, agents, licensees, and invitees. In areas where the facility is aware of routine trespassing, trespassers will be covered.
- Cover all activities and reasonably anticipated future activities, including, but not limited to, any future soil disturbance, routine and nonroutine utility work, well placement and drilling, recreational activities, groundwater withdrawals, paving, training activities, construction, renovation work on structures or other activities.
- A tracking mechanism that identifies all land areas under restriction or control.

- A process to promptly notify both EPA and the State prior to any anticipated change in land use designation, restriction, land users, or activity for any institutional control required by a decision document.

Within 6 months of signature of this ROD, a monitoring report on the status of institutional controls at WAG 4 will be submitted to the EPA and Idaho Department of Health and Welfare. An updated institutional control monitoring report will be submitted to the EPA and Idaho Department of Health and Welfare at least annually thereafter. After the facility's comprehensive facility-wide approach is well established and the facility has demonstrated its effectiveness, the frequency of future monitoring reports may be modified subject to approval by EPA and the State. The institutional control monitoring report will contain at a minimum:

- A description of how DOE is meeting the facility-wide institutional control requirements
- A description of how DOE is meeting the WAG 4 specific objectives, including results of visual field inspections of all areas subject to WAG 4 specific restrictions
- An evaluation of whether or not all the WAG specific and facility-wide institutional control requirements are being met
- A description of any deficiencies and the efforts or measures that have been or will be taken to correct problems.

EPA and State review of the institutional control monitoring report will follow existing procedures for agency review of documents.

The DOE will notify EPA and the State immediately upon discovery of any activity that is inconsistent with the WAG specific institutional control objectives, or of any change in the land use or land use designation of a site addressed in the WAG 4 list of areas or locations covered by institutional controls. DOE will work together with EPA and the State to determine a plan of action to rectify the situation except in the case where DOE believes the activity creates an emergency situation, the DOE can respond to the emergency immediately upon notification to EPA and the State and need not wait for EPA or State input to determine a plan of action. DOE will identify a point of contact for implementing, maintaining, and monitoring institutional controls. DOE will also identify what went wrong with the institutional control process, evaluate how to correct the process to avoid future problems, and implement these changes after consulting with EPA and the State.

DOE will notify EPA and the State at least 6 months prior to any transfer, sale or lease of any property subject to institutional controls required by an EPA decision document so that EPA and the State can be involved in discussions to ensure that appropriate provisions are included in the conveyance documents to maintain effective institutional controls. DOE will not delete or terminate any institutional control unless EPA and the State have concurred in the deletion or termination. If it is not possible for DOE to notify EPA and the State at least 6 months prior to any transfer, sale or lease, then DOE will notify EPA and the State as soon as possible but no later than 60 days prior to the transfer, sale, or lease of any property subject to institutional controls.

12.3 Estimated Costs for the Selected Remedies

A summary of the estimated costs for each of the selected remedies for CFA-04, CFA-08 and CFA-10 is presented in Table 12-3. All initial and future life-cycle costs are normalized to net present

value (NPV). The NPV is the cumulative worth of all costs, as of the beginning of the first year of activities, accounting for inflation of future costs. All NPV costs were estimated assuming variable annual inflation factors for the first 10 years, per DOE guidance and cost estimating procedures. A constant 5% discount rate is assumed. An O&M period of 100 years was assumed, consistent with the assumed 100 year institutional control period. The estimates were prepared to meet the accuracy range of +50% to -30% required by CERCLA.

It should be noted that the costs presented in Table 12-2 for CFA-04 differ from the costs presented in the OU 4-13 RI/FS and the Proposed Plan. The revised cost estimate is \$4.8 million NPV versus the previous estimate of \$6.9 million NPV. The cost estimate is lower because the five-year review costs have been reduced and ICDF disposal costs that will be borne by WAG 3 have been eliminated. These modifications are documented in (DOE-ID 2000d).

Table 12-1. Institutional control evaluation for WAG 4 sites.

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
Evaluations of sites that have had or will have remedial actions.					
CFA-01	Landfill I	OU 4-12 RI/FS	Yes	Landfill waste was left in place after remediation under the OU 4-12 ROD. Risks for all exposure pathways are less than 1E-04. A groundwater monitoring plan for the remaining 26 years out of 30 years is in place.	Maintain land use controls and re-evaluate at the five-year review.
CFA-02	Landfill II				
CFA-03	Landfill III				
CFA-04	Pond	OU 4-05 Track 2 OU 4-13 RI/FS	No	Future 100-year residential hazard index of 80 which will be remediated per this ROD.	None
CFA-08	Sewage Plant Drainfield	OU 4-08 Track 2 OU 4-13 RI/FS	Yes	Current occupational risk is 2E-03. Future 100-year residential risk is 4E-04. Contaminated soil will be left in place after implementation of the remediation prescribed in the ROD.	Maintain land use controls for 189 years to inhibit intrusion into the buried waste. Restrict residential land use until risk is less than 1E-04 (2.3 pCi/g cesium-137) or the site is released based on the results of a five-year review.
CFA-10	Transformer Yard	OU 4-09 Track 2 OU 4-13 RI/FS	No	Lead concentration in excess of the EPA residential screening level of 400 mg/kg will be remediated per this ROD.	None
Evaluation of no action and no further action sites.					
CFA-05	Motor Pool Pond	OU 4-11 ROD OU 4-13 RI/FS	No	All human health risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-11 ROD, was further evaluated and determined to be a no action site in the OU 4-13 RI/FS.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-06	Lead Shop (outside areas)	OU 4-06 Track 2, Time Critical Removal Action OU 4-13 RI/FS	No	Lead and arsenic contaminated soil removed. Lead concentrations are below the 400 mg/kg screening level. Arsenic, slightly above background, is naturally occurring. No quantifiable risk or hazard was evident after removal action. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-07	French Drains E/S (CFA-633)	OU 4-07 Track 2 Non-time critical removal action OU 4-13 RI/FS	Yes	French drains were removed. Total Risk is less than 1E-06. Total hazard index is less than 1 for contaminants between the surface and 3 m (10 ft) below grade. Suspected lead concentrations above 400 mg/kg and radionuclides at depths greater than 4 m (13 ft). This site is recommended as a no further action site per this ROD.	Limit land use at depths greater than 3 m (10 ft) until otherwise evaluated and documented in a five-year review.
CFA-08	Sewage Treatment Plant	OU 4-08 Track 2 OU 4-13 RI/FS	No	All risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
	Pipeline	OU 4-08 Track 2 OU 4-13 RI/FS	No	No COCs. No quantifiable risk or hazard.	None
CFA-09	Central Gravel Pit	OU 10-05 Interim Action ROD	No	Using geophysical techniques a suspected ordnance shell was not located. No quantifiable risk or hazard was indicated. This site was determined to be a no action site in OU 10 -05 Interim Action ROD.	NA

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-11	French Drain	OU 10-05 Interim Action ROD	No	Using geophysical techniques a suspected ordnance shell was not located. No quantifiable risk or hazard. This site was determined to be a no action site during the OU 10-05 Interim Action ROD.	None
CFA-12	French Drains (2) (CFA-690)	OU 4-07 Track 2 Time-critical Removal Action OU 4-13 RI/FS	No	The dry wells were removed. Contamination removed to basalt. All risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action in the OU 4-13 RI/FS.	None
CFA-13	Dry Well (south of CFA-640)	OU 4-02 Track 1 Non-time Critical Removal Action OU 4-13 RI/FS	No	The dry well was removed. Total risk is less than 1E-06 for and current and future resident, after elimination of naturally occurring Ra-226 and arsenic. Total hazard index is less than 1 for current and future resident. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-14	Two Dry Wells	OU 4-02 Track 1	No	Dry wells were never found after demolition of Building CFA-665 in 1998. Original building plans indicate they would have received rainwater from roof drains. No quantifiable risk or hazard was found at this site. This site was eliminated as a no action site from the OU 4-13 RI/FS.	None
CFA-15	Dry Well (CFA-674)	OU 4-02 Track 1 Non time Critical Removal Action OU 4-13 RI/FS	No	The drywell was removed. Risk is less than 1E-06 for current and future resident after elimination of naturally occurring Ra-226. This site was determined to be a no action site in the OU 4-13 RI/FS.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-16	Dry Well (south of CFA-682 pumphouse)	OU 4-02 Track 1	No	The drywell was left in place. No quantifiable risk or hazard to residential receptor was identified. This site was eliminated as a no action site in the OU 4-13 RI/FS.	None
CFA-17	Fire Department Training Area, bermed	OU 4-05 Track 2 Non-time Critical Removal Action OU 4-13 RI/FS	No	Contaminated soil removed. All risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-18	Fire Department Training Area, Oil Storage Tanks	OU 4-03 Track 1	No	The tank was removed with no evidence of leakage. No quantifiable risk or hazard. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-19	Gasoline Tanks (2) East of CFA-606	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The former tank location was investigated with ground penetrating radar; tanks were not located. No quantifiable risk or hazard was found at this site. This site was determined to be a no action site in the OU 4-03/-12 ROD and was not further evaluated in this ROD.	None
CFA-20	Fuel Oil Tank at CFA-609 (CFA-732)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No quantifiable risk or hazard was found at this site. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-21	Fuel Tank at Nevada Circle 1 (South by CFA-629)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/12 ROD and was not further evaluated in this ROD.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-22	Fuel Oil at CFA-640	OU 4-03 Track 2	No	The tank was removed. Contaminants in remaining soil were analyzed and evaluated to have a risk less than 1E-06 and a hazard index less than 1. This site was eliminated as a no action site in the OU 4-13 RI/FS.	None
CFA-23	Fuel Oil Tank at CFA-641	OU 4-03 Track 1	No	The tank was removed. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-24	Fuel Tank at Nevada Circle 2 (South by CFA-629)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No holes or signs of leakage were observed. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-25	Fuel Oil Tank at CFA-656 (North Side)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No evidence of leakage observed. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-26	CFA-760 Pump Station Fuel Spill	OU 4-09 Track 2	No	The tank was removed. All risks due to soil exposure are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-27	Fuel Oil Tank at CFA-669 (CFA-740)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. Contaminated soil was removed. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-28	Fuel Oil Tank at CFA-674 (West)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No evidence of leakage was found. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-29	Waste Oil Tank at CFA-664	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. Contaminated soil was removed. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-30	Waste Oil Tank at CFA-665, active	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. Contaminated soil was removed. No contaminants were detected that exceed 1E-06 risk-based concentrations. No quantifiable risk or hazard was found. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-31	Waste Oil Tank at CFA-754, active	OU 4-03 Track 1	No	The tank was removed. Contaminated soil was removed. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03 /-12 ROD.	None
CFA-32	Fuel Tank at CFA-667 (North Side)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No evidence of leakage was found. No contaminants were detected. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-33	Fuel Tank at CFA-667 (South Side)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. Contaminated soil near filling post was removed. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-34	Diesel Tank at CFA-674 (South)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. Contaminated soil was removed. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-35	Sulfuric Acid Tank at CFA-674 (West Side)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No evidence of leakage was found. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-36	Gasoline Tank at CFA-680	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No evidence of leakage was found. No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-37	Diesel Tank at CFA-681 (South Side)	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No evidence of leakage was found. No contaminants were detected that exceed 1E-06 risk-based concentrations. No quantifiable risk or hazard. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-38	Fuel Oil Tank, CFA-683	OU 4-03 Track 1 OU 4-03/-12 ROD	No	The tank was removed. No contaminants were detected that exceed is less than risk-based concentrations. This site was determined to be a no action site in the OU 4-03/-12 ROD.	None
CFA-39	Drum Dock (CFA-771)	OU 4-04 Track 1 OU 4-03/-12 ROD	No	No source-term. This site was determined to be a no action site in the OU 4-04 Track 1.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-40	Returnable Drum Storage-South of CFA-601	OU 4-04 Track 1	No	No quantifiable risk or hazard was found. This site was determined to be a no action site in the OU 4-04 Track 1.	None
CFA-41	Excess Drum Storage – south of CFA-674	OU 4-04 Track 1	No	No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was determined to be a no action site in the OU 4-04 Track 1.	None
CFA-42	Tank Farm Pump Station Fuel Spills	OU 4-09 Track 2, Non-time Critical Removal Action OU 4-13 RI/FS	No	Petroleum contaminated soil was removed. All risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-43	Lead Storage Area	OU 4-06 Track 2, Time Critical Removal Action OU 4-13 RI/FS	No	Lead and antimony contaminated soil was removed. Lead and antimony concentrations are less than 400 mg/kg screening level and risk-based concentration of 31, respectively. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-44	Spray Paint Booth Drain	OU 4-06 Track 2, Time Critical Removal Action OU 4-13 RI/FS	No	Lead concentrations are less than 400 mg/kg screening level. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-45	Underground Storage Tank	OU 4-03 Track 2	No	No contaminants were detected that exceed 1E-06 risk-based concentrations. This site was eliminated as a no action site in the OU 4-13 RI/FS.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-46	Cafeteria Oil Tank Spill (CFA-721)	OU 4-09 Track 2 OU 4-13 RI/FS	No	All risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-47	Fire Station Chemical Disposal	OU 4-05 Track 2, Non-time Critical Removal Action OU 4-13 RI/FS	No	Petroleum contaminated soil removed. Lead concentrations are less than 400 mg/kg screening level. Total risk is less than 1E-06 for current and future resident. Total hazard index is less than 1 for current and future resident. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-48	Chemical Washout South of CFA-633	OU 4-07 Track 2,	No	No COCs identified, however mercury was detected. Total risk is N/A. Total hazard index is less than 1 for current and future resident. This site was eliminated as a no action site in the OU 4-13 RI/FS.	None
CFA-49 (Part of CFA-08 SP)	Hot Laundry Drain Pipe	OU 4-08 Track 2, OU 4-13 RI/FS	No	No COCs identified. All risks are less than 1E-06 and the hazard index is less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None
CFA-50	Shallow Well East of CFA-654	OU 4-05 Track 2,	No	No COCs identified. Lead concentrations are less than 400 mg/kg. Risk - Not quantifiable. Total HI is less than 1. This site was eliminated as a no action site in the OU 4-13 RI/FS.	None
CFA-51	Drywell at North End of CFA-640	OU 4-13 RI/FS	No	No COCs identified. Lead concentrations are less than 400 mg/kg. This site was determined to be a no action site in the OU 4-13 RI/FS.	None

Table 12-1. (continued).

Site Code	Site Name	FFA/CO Classification	Institutional controls (Yes/No)	Basis for No Action or Institutional Controls	Description of Institutional Controls
CFA-52	Diesel Fuel UST (CFA-730) at Bldg CFA-613 Bunkhouse	OU 4-13 RI/FS	No	All risks are less than 1E-06 and a hazard index less than 1. This site was determined to be a no action site in the OU 4-13 RI/FS.	None

Table 12-2. Institutional control requirements for WAG 4 remediated sites.

Timeframe	Land Restriction ^a	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Site CFA-01, CFA-02, CFA-03 Landfills I, II and III, respectively, (OU 4-12). Cumulative risk is less than 1E-04 for future resident. Covers emplaced as presumptive remedies.					
Current DOE operations	Landfill—no unauthorized intrusion into capped area	Buried waste including asbestos	Maintain integrity of soil cover	<ol style="list-style-type: none"> 1. Visible access restrictions (warning signs and permanent markers) 2. Control of activities (drilling or excavating and drilling of residential drinking water wells) 3. Publication of surveyed boundaries and descriptions of controls in the INEEL Land Use Plan (DOE-ID 1996) 	Federal Facility Agreement and Consent Order (DOE-ID 1991) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120(h)]
DOE control post operations (i.e., after operations cease)	Landfill—no unauthorized intrusion into capped area	Buried waste including asbestos	Maintain integrity of soil cover	<ol style="list-style-type: none"> 1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating) 3. Property lease requirements including control of land use consistent with this ROD 4. Notice to affected stakeholders (e.g., Bureau of Land Management, Sho-Ban Tribal Council, local county governments, IDHW, and the EPA) for any change in land-use designation, restriction, or land users 	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(5)] ^b Hall Amendment of the National Defense Authorization Act ^c (Public Law 103-160) Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction ^a	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Post DOE control	Landfill—no unauthorized intrusion into capped area	Buried waste including asbestos	Maintain integrity of soil cover	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use consistent with this ROD.	FFA/CO (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(3)] ^d CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)] ^e CERCLA [42 USC 9620 § 120(h)(3)(A)(iii)] ^f CERCLA [42 USC 9620 § 120(h)(1)-(3)] ^g CERCLA [42 USC 9620 § 120(h)(4)] ^h Property relinquishment notification (43 CFR 2372.1) ⁱ Criteria for Bureau of Land Management acceptance of property 43 CFR 2374.2 ^j Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7) ^k Property release restrictions (DOE Order 5400.5)
CFA-08 Sewage Plant Drainfield. Subsurface radiological contamination to be remediated by capping in accordance with this ROD.					
Contaminant of Concern cesium-137					
Current DOE operations—prior to remediation	Industrial	Radionuclides—external radiation	Prevent exposure to contaminated soil, except for approved activities pursuant to the FFA/CO	1. Visible access restrictions (radioactivity barriers) 2. Control of activities (drilling or excavating)	FFA/CO (DOE-ID 1991) Worker protection (10 CFR 835) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120(h)] Radiation protection of the public and ALARA principles (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction ^a	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Current DOE operations after remediation	Landfill—no unauthorized intrusion into capped area	Exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	<ol style="list-style-type: none"> 1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating) 3. Publication of surveyed boundaries and descriptions of land-use controls in the INEEL Land Use Plan (DOE-ID 1996) 	FFA/CO (DOE-ID 1991) Worker protection (10 CFR 835) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120(h)] Radiation protection of the public and ALARA principles (DOE Order 5400.5)
DOE control post operations	Landfill—no unauthorized intrusion into capped area	Exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	<ol style="list-style-type: none"> 1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating) 3. Property lease requirements including control of land-use consistent with this RODs 	FFA/CO (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(5)] ^b Hall Amendment of the National Defense Authorization Act (Public Law 103-160) ^c Property release restrictions (DOE Order 5400.5)
Post DOE control	Landfill—no unauthorized intrusion into capped area	Exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use consistent with this ROD.	FFA/CO (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(3)] ^d CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)] ^e CERCLA [42 USC 9620 § 120(h)(3)(A)(iii)] ^f CERCLA [42 USC 9620 § 120(h)(1)-(3)] ^g CERCLA [42 USC 9620 § 120(h)(4)] ^h Property relinquishment notification (43 CFR 2372.1) ⁱ Criteria for Bureau of Land Management acceptance of property 43 CFR 2374.2 ^j Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7) ^k Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction ^a	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Site CFA-07 French Drains. This site has suspected lead contamination at depths greater than 4 m (13 ft).					
DOE control post operations	Limited residential	Various-minimal concern	Limit residential land use for depths greater than 10 feet	1. Visible access restrictions/signs 2. Property lease requirements including control of land-use consistent with this ROD	FFA/CO (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(5)] ^b Hall Amendment of the National Defense Authorization Act (Public Law 103-160) ^c Property release restrictions (DOE Order 5400.5) FFA/CO (DOE-ID 1991)
Post DOE control	Limited residential	Various-minimal concern	Limited residential land use	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use consistent with this ROD.	CERCLA [42 USC 9620 § 120(h)(3)] ^d CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)] ^e CERCLA [42 USC 9620 § 120(h)(3)(A)(iii)] ^f CERCLA [42 USC 9620 § 120(h)(1)-(3)] ^g CERCLA [42 USC 9620 § 120(h)(4)] ^h Property relinquishment notification (43 CFR 2372.1) ⁱ Criteria for Bureau of Land Management acceptance of property 43 CFR 2374.2 ^j Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7) ^k Property release restrictions (DOE Order 5400.5)
<p>a. Institutional controls are applicable only to sites where hazardous substances, pollutants, or contaminants are present that preclude unlimited land use. Surveillance will be conducted every 5 years to ensure that controls are in place.</p> <p>b. Notification to states of leases involving contamination. Concurrence of the EPA is requested on leases of NPL (54 FR 48184) sites.</p> <p>c. Consult with and request concurrence of EPA with proposed leases of sites that are on the NPL.</p> <p>d. A statement that remedial action is complete is required in the deed.</p> <p>e. If response action for which the federal government is responsible is not complete, restrictions, the response guarantee, the schedule for investigation and completion of all necessary response actions, and budget assurances must be included in the deed.</p> <p>f. A clause allowing the U.S. government access to the property must be included in the deed.</p> <p>g. A notice of information about hazardous substances present on the property must be included in the deed.</p> <p>h. Uncontaminated parcels of land must be identified and concurred with by the EPA administrator before termination of operations.</p> <p>i. A Notice of Intent with contamination information and protection needs is required to relinquish the property to the U.S. Department of Interior.</p> <p>j. Transfer to the U.S. Department of Interior must indicate continuation of DOE responsibility, as applicable.</p> <p>k. Report to the General Services Administration on contamination information and allowable land use for excess real property.</p>					

Table 12-3. Cost estimate summary for selected remedy at OU 4-13: Pond (CFA-04), SP Drainfield (CFA-08), and Transformer Yard (CFA-10).

Planned Activity	Cost FY-99 (dollars)		
	Pond (CFA-04) Alternative 3a	SP Drainfield (CFA-08) Alternative 4	Transformer Yard (CFA-10) Alternative 3b
FFA/CO management and oversight	\$437,500	\$312,500	\$219,000
Remedial action			
Document preparation			
RD/RA SOW	\$54,000	\$54,000	\$54,000
RA work plan	\$63,000	\$63,000	\$63,000
Packaging, shipping, transportation documentation	N/A	N/A	\$78,000
Remedial action report	\$48,000	\$48,000	\$48,000
WAG-Wide RA — Five-Year Review	\$176,000	\$811,000	N/A
RD documentation preparation			
Safety analysis documentation (ASA and HSP)	\$100,500	\$100,500	\$100,500
Sampling and analysis plan	\$108,000	\$108,000	\$108,000
Prefinal inspection report	\$7,500	\$7,500	\$7,500
Remedial design			
Added institutional controls – Five-Year Reviews	\$10,000	\$200,000	N/A
Title design construction document package	\$85,000	\$59,500	\$60,000
Remedial action—construction subcontract			
Site characterization	\$1,394,000	\$248,000	\$76,000
Construction subcontract/GFE	\$1,245,059	\$3,280,000	\$322,000
Project/construction management allowance	\$202,701	\$534,000	\$37,000
Total Capital Costs	\$3,931,260	\$5,826,000	\$1,173,000
Operations (100-year Duration)			
Program management	N/A	\$3,385,000	N/A
Continued/new construction CFA caretaker/maintenance	N/A	\$2,460,000	N/A
Surveillance and monitoring	N/A	\$420,000	N/A
Total Operations Costs	0	\$6,265,000	0

Table 12-3. (continued).

Planned Activity	Cost FY-99 (dollars)		
	Pond (CFA-04) Alternative 3a	SP Drainfield (CFA-08) Alternative 4	Transformer Yard (CFA-10) Alternative 3b
Capital Cost Subtotal	\$3,931,260	\$5,826,000	\$1,173,000
Contingency @ 30%	\$1,179,378	\$1,747,800	\$351,900
Total Capital Cost in FY99 Dollars	\$5,110,638	\$7,573,800	\$1,524,900
Total Capital Cost in Net Present Value	\$4,766,092	\$6,508,000	\$1,442,000
O&M Cost Subtotal	N/A	\$6,265,000	N/A
Contingency @ 30%	N/A	\$1,879,500	N/A
Total O&M Cost in FY99 Dollars	N/A	\$8,144,500	N/A
Total O&M Cost in Net Present Value	N/A	\$3,486,000	N/A
Total Project Cost in FY 1999 Dollars	\$5,110,638	\$15,718,300	\$1,524,900
Total Project Cost in Net Present Value Dollars	\$4,766,092	\$9,994,000	\$1,442,000

ASA = Auditable Safety Analysis
 HSP = Health and Safety Plan
 GFE = government furnished equipment.